BY ORDER OF THE COMMANDER
436TH AIRLIFT WING

DOVER AIR FORCE BASE
INSTRUCTION 91-102

30 OCTOBER 2002

Safety

C-5 DEFENSIVE SYSTEM (DS) FLARE HANDLING AND LOADING/DOWNLOADING PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This Dover instruction establishes specific guidance for the Defensive System (DS) modified C-5 aircraft. This instruction is applicable to wing agencies involved in the handling or directing of operations involving C-5 aircraft modified with DS or associated munitions.

SUMMARY OF REVISIONS

Established the use of a safety observer during upload/download operations, section **2.** Changed safe distance in front of DS loaded aircraft, section **4.** Changed the quantity and placement of explosive placards, section **5.** Added Hot Cargo pad as a flare related IFE arm/de-arm area, section **5.** Defined the explosive clear zone around DS explosive laden aircraft, section **6.** Added **Attachment 3**, PRIMARY AND SECONDARY EXPLOSIVE ZONES SURROUNDING DS MODIFIED C-5. **A bar (|) indicates a change since the last edition.**

1. General. The procedures outlined below, in conjunction with any specific squadron operating instructions, must be followed to ensure the AN/ALE-47 Countermeasures Dispensing System (CMDS) munitions and munitions loaded C-5 aircraft are handled safely and expeditiously. This system uses Hazard Class/Division 1.3 munitions that require special handling and coordination by all organizations involved. Any recommended changes or additions to this instruction must be coordinated through the following agencies prior to Office of Primary Responsibility (OPR): 436 CMS, AN/ALE-47 Countermeasures Dispensing System (CMDS) and flare load training and certification; 436 AMXS, flare loading; 436 EMS/LGEW, flare magazine pre-load and munitions delivery; 436 MXG (MOC) notification and coordination actions, and 436 AW/SE overall weapons systems safety.

2. Crew Compositions. Each 436th Aircraft Maintenance Squadron (AMXS) Aircraft Maintenance Flight (AMF) will have a minimum of two full crews with two augmentees. A crew consists of three per-

sonnel, two Flareload qualified technicians capable of loading an aircraft in approximately three hours, and one safety observer who is not required to be Flareload qualified.

3. Training Requirements. The 436th Component Maintenance Squadron (CMS) Electronic Countermeasures Section is responsible for providing AN/ALE-47 CMDS flare load training and certification to qualify flare load crewmembers. Re-certification of qualified personnel includes annual classroom instruction and annual demonstration. 436 CMS, AMXS, and EMS will maintain a listing of qualified loaders tracked by GO-81.

4. Parking Restrictions.

4.1. Anytime the aircraft visor is open while flares are loaded; the CMDS becomes a forward firing ordnance. Standing, stopping, or parking directly in front of aircraft with visor open to observe operations will be limited to no closer than 350 ft.

4.2. Flare loading/downloading procedures will not be conducted in maintenance hangars or on the designated aircraft parking locations between hangar facilities. There are no hangers on Dover AFB or Parking spots between hangers that are authorized HC/D 1.3 explosives operations, storage, or parking. Parking and flare loading/downloading procedures are authorized on spots E through CC.

4.3. Aircraft on adjacent spots to flare loading/down loading will not load or offload fuel, run engines, run APUs or service liquid oxygen.

4.4. Aircraft loaded with explosives, to include DS Flareloads, will not be used as static display.

5. Fire Protection.

5.1. Posting fire hazard symbols.

5.1.1. The fire symbol signs will be posted within 50 feet of the aircraft. Post fire symbols 1.3 at each aircraft.

5.1.2. Post three-sided fire symbols at the nose and tail of each flare loaded aircraft. Only when *all* aircraft are equipped and loaded, the main ramp may be designated as fire symbol 1.3 and fire symbols can be posted at ramp entry points.

5.1.3. MOC notifies the Fire Alarm Communication Center (FACC) at x4401 when each aircraft is loaded or unloaded. Give aircraft tail number and parking location.

5.2. Aircraft ground emergency with flares on-board.

5.2.1. If flares are involved or suspected to be involved, all personnel and equipment must be pulled back away from the ground emergency aircraft a distance of at least 600 feet. This would require the clearing of two (2) aircraft parking spots on either side of the aircraft experiencing a ground emergency. Additionally, no aircraft would be allowed to taxi in front or behind the aircraft experiencing the ground emergency.

5.3. Aircraft in-flight emergency with flares on-board.

5.3.1. The aircraft commander notifies the control tower of the nature of the emergency. The control tower will ring out the primary crash net.

5.3.1.1. Command Post notifies the FACC, MOC, and Archer 2/Production Superintendents

of the presence of flares and the number remaining (if known).

5.3.2. If IFE is flare related, aircraft will be parked in designated arm/de-arm area at approach end of runway 19 or the hot cargo pad if there are no explosive laden aircraft present. The flares will be made safe and downloaded by appropriate EOD and flare download personnel before parking on the main ramp.

5.3.3. The minimum withdrawal distance for personnel and equipment if flares are a potential factor in the emergency situation is 600 feet.

5.4. Fire fighting procedures for MJU-10 Countermeasures Flares.

5.4.1. For fires involving pyrotechnics and magnesium incendiaries, do not use fire extinguishers on or near the munitions.

5.4.2. Fires may be fought if explosives are not directly involved.

5.4.3. Do not smoke within 100 feet of aircraft to include the designated smoking area in front of the plane.

6. Aircraft Flare Explosive Safety Zones

6.1. There are two explosive safety zones (Primary Explosive Safety Zone and Secondary Explosive Safety Zone) around an aircraft when flare loading/down loading operations are being conducted and when flares are loaded on the aircraft (See **Attachment 3**). All entry and work in these zones is controlled by specific restrictions on activities.

6.2. The Primary Explosive Safety Zone (PESZ) extends 50 feet in front of the aircraft, and continues around the aircraft following the white parking block boarder on both sides and the rear of aircraft (See **Attachment 3**). The PESZ is in effect when flare loading/down loading operations are being conducted on the aircraft. All aircraft on adjacent spots to flare loading/down loading will not on-load or off-load fuel, run engines, run APU's or service liquid oxygen. While a flare load operation is in progress, all other maintenance and entry into or through the PESZ is prohibited. Exception may be made for casuals who must perform actions that are absolutely mission critical. Archer 2, coordinating with the safety observer and flare load crew chief will determine mission criticality and if the action(s) must be performed at that time. The safety observer in coordination with the flare load crew chief is the final authority for all activity within the PESZ during flare loading/down loading operations. The flare load crew chief also assumes responsibility for all personnel and equipment within the PESZ. Personnel requiring entry into the zone will receive an explosive safety briefing prior to entry by either flare load crew chief or safety observer. The flare crew chief and or safety observer will also ensure the other member(s) of the flare load team are aware of the additional personnel and activity in the zone. Archer 2 is responsible for ensuring that interruptions to the flare load are kept to a minimum and in compliance with the cardinal principle for Explosive Safety, exposing the minimum number of people to the minimum amount of explosives for the minimum amount of time.

6.3. Secondary Explosive Safety Zone (SESZ), has an unmarked boundary 100 feet from the flare aircraft and encompasses all aircraft parked adjacent to the flare aircraft (See **Attachment 3**). Similar to the PESZ, the SESZ is in effect anytime flares are loaded on the aircraft or flare loading/down loading operation is in progress. Smoking is prohibited within this zone at all times and is only allowed in designated smoking area. While flare loading/down loading is in progress, aircraft within this zone, or having any portion crossing the zone boundary will not on-load or off-load fuel, run engines, APU's,

or service liquid oxygen (LOX). Any maintenance activity requiring open fuel lines, fuel tanks, or removal of fuel quantity system probes from any tank is also prohibited within the SESZ during flare loading operations. All other maintenance activities are permissible within the SESZ as required.

6.4. The approach procedures for entering the PESZ during flare loading/down loading operations can be initiated when permission to approach the PESZ has been approved by Archer 2. The casual requiring access **WILL NOT** park vehicles in parking blocks assigned to aircraft were flare loading/down loading operations are being conducted. The casual will park or direct all vehicles to the adjacent aircraft parking block spots, outside the PESZ. The casual will maintain 50 feet from the PESZ, stopping forward of the aircraft taxi line that splits left and right**,** remaining outside the PESZ until the safety observer (**WEARING LIME GREEN REFLECTIVE VEST**) recognizes the casual. The safety observer in coordination with flare load crew chief will grant permission to enter the PESZ, if explosive and flare loading safety procedures are not compromised.

6.5. The Flare Load Crew Chief is responsible for the safe execution of flare loading/down loading operation with the Safety Observer maintaining the integrity of the PESZ during flare loading operations. The Safety observer will be wearing a **LIME GREEN REFLECTIVE VEST** for ease of identification, and will be the contact for personnel approaching the Primary Explosive Safety Zone during flare loading/down loading operations.

6.6. Any unusual occurrence that could in the judgement of the flare load team compromise the safe execution of a flare loading/down loading operation, will be grounds for immediate termination of the flare loading/down loading operation. The flare load crew chief will utilize Operational Risk Management techniques, evaluating the potential hazard for validity and seriousness to determine if the flare loading/down loading operation can continue. The flare load crew chief will be the final authority on the decision to continue flare loading/down loading operation.

7. Flare Load Coordination.

7.1. TACC notifies Current Operations and Plans and Scheduling of DS tasking for Dover AFB.

7.2. Current Operations will notify the following agencies to perform their required actions via Plans and Scheduling and the daily schedule. ***NOTE:*** Only those missions that require DS aircraft will depart with the system uploaded. Flares will be downloaded if a tail swap to another mission is required.

7.2.1. Plans and Scheduling, through the 1300(L) MXG Production meeting, plans and schedules the event, i.e., select aircraft tail number, coordinate aircraft availability, indicate configuration, schedule time line, establish requirements in daily/weekly flying schedule.

7.2.2. Command Post/MOC - notifies and coordinates actions with the following agencies and initiates conference III DAFB Form 22. Conf III - information only; action as required.

7.2.2.1. Equipment Maintenance Squadron (EMS) Munitions - prepare magazines for installation on the aircraft.

7.2.2.2. AMXS - (primary flare load teams are in AMXS) schedule their teams in accordance with the established sequence of events. AMXS will ensure munitions (LGEW) has a current listing of Flare Team Members authorized to sign for receipt of flares.

7.2.2.3. CMS/MXGRAE - The OPR for AN/ALE-47 Countermeasure Dispensing System (CMDS) maintenance and flare load standardization.

8. Flare Load Process.

8.1. Flares will be loaded before loading cargo. NLT 8 hours before the scheduled aircraft departure time, Plans and Scheduling will advise the MOC to accomplish the following actions:

8.1.1. Advise AMXS and EMS Production Supervisors, EMS Munitions, CMS Electronic Countermeasures Section, and the Fire Department of the aircraft tail number, location, and the required flare load.

8.2. AMXS will accomplish the following configuration of the aircraft at approximately 12 hours prior to scheduled take off: flaps-up, visor down, and power-on to accomplish the flare pre-load/stray voltage checks and power-off to accomplish the flare load.

8.3. The AMF will ensure the following support equipment is available and in place: one B-1 stand, two manlifts or two B-2 stands, NF-2 light cart (if necessary) and 2 Fire Hazard 1 placards, one for the nose and one for the tail of the aircraft.

8.4. AMF Production Superintendents will advise AMXS Flare Load Team/CMS Electronic Countermeasures Section when the flare pre-load/stray voltage checks can begin.

8.5. AMXS flare load team will perform pre-load and stray voltage checks.

8.6. The stray voltage checks are good for 24 hours as long as power is not applied to the aircraft.

9. Flare Load Procedures.

9.1. Flare load procedures should be completed before a normal home station sequence of events (SOE) begins. Follow the SOE listed in **Attachment 2** of this Instruction.

9.2. Command Post will contact Explosive Ordnance Disposal and Wing Safety in case of a munitions mishap involving the DS. All nonessential personnel will be evacuated a minimum of 600 feet from the site.

9.3. During normal duty hours (0700-1600), AMXS Flare Load Team will contact the Production Superintendent to notify MOC and request flare delivery approximately 30 minutes before up load after completion of the pre-load/stray voltage checks. After normal duty hours, AMXS Flare Load Team will contact Excel 3 who will notify Munitions stand-by personnel of requirements.

9.4. Munitions personnel will deliver flares to designated aircraft parking location and have assets signed for by authorized Flare Load Team member. (EMS Munitions personnel will standby at Munitions Storage Area until successful upload is completed.)

9.5. MOC will notify the Fire Department when hazard class 1.3 munitions have been delivered to the upload location.

9.6. AMXS or CMS Load Team will perform the flare load operations.

9.7. Upon completion of the upload, normal maintenance may continue on the aircraft, to include towing operations provided that:

9.7.1. Appropriate placards are posted (HC/D 1.3.)

9.7.2. The CMDS is safe (power removed from CMDS and master safety switch pin installed)

9.7.3. The proposed maintenance will not increase the probability of causing flare dispensing or create an unsafe environment.

9.7.4. All safety practices and devices are employed.

9.7.5. All personnel working on or around aircraft have received explosive safety training. Refer to T.O. 11A-1-33 *Handling and Maintenance of Explosives-Loaded Aircraft.*

10. Flare Download Procedures.

10.1. In case of a hung flare or explosive incident/accident involving flares, Command Post must immediately notify EOD and munitions.

10.2. MOC will notify the AMXS and EMS Production supervisors (Archer 2, and Excel 3,) EMS Munitions, Fire Department (hazard class 1.3 munitions and location to be used) Conf III, and when applicable CMS/ECM shop one hour before aircraft arrival. This notification will initiate the flare download procedures.

10.3. Aircrew performs end-of-runway scan for hung flares and notifies Command Post of status.

10.4. In case of hung flares, aircraft will taxi to arm/de-arm area (approach end runway 19). Command Post/MOC will notify explosive Ordnance Disposal (EOD) and Wing Safety. Downloading will continue after EOD approval and before towing aircraft.

10.5. Normal operations will require flare downloading after termination of flight. When the aircraft is scheduled for successive DS flare missions, Archer-2 will determine if downloading is required before any maintenance is performed. If feasible, aircraft should be downloaded prior to extensive maintenance or ground time.

10.6. Flare load teams will notify the respective SGF Production Supervisor who will notify MOC when download is complete.

11. TDY Considerations.

11.1. The following specialists are required in accordance with unit type code HFHADO to maintain flare load and system repair capabilities at a deployed location:

11.1.1. 2A1X7 Electronic Warfare System technicians to maintain the CMDS, and assist with the flare load procedures. (POC CMS)

11.1.2. Flare load qualified C-5 team, any C-5 AFSC, to assist with aircraft maintenance and perform flare load procedures.

(POC AGS)

11.1.3. 2W0X1 Munitions Maintenance technicians to prepare the required flares for installation and handle storage of download flares (POC EMS).

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Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFMAN 91-201, *Explosive Safety Standards*

AMC Concept of Operations for Employing Defensive Systems

DAFBI 11-201, *Flying Operations*

DAFBI 11-205, *Support of Aircraft Transporting Hazardous Cargo*

DAFBI 91-201, *Weapons Safety Program*

TO 1C-5A-2-8-2, *Radio Communication and Navigation Systems*

TO 1C-5A-33-1-2, *Non-Nuclear Munitions Loading Procedures*

TO 1C-5A-33-1-2CL-2, *Checklist, Non-Nuclear Loading Procedures*

TO 11A-1-46, *Fire Fighting Guidance, Transportation, and Storage*

Abbreviations and Acronyms

AMF—Aircraft Maintenance Flight

AMXS—Aircraft Maintenance Squadron

APU—Auxiliary Power Unit

CMDS—Countermeasures Dispensing System

CMS—Component Maintenance Squadron

DS—System

EOD—Explosives Ordinance Disposal

EMS—Equipment Maintenance Squadron

FACC—Fire Alarm Communications Center

IFE—In Flight Emergency

LOX—Liquid Oxygen

MOC—Maintenance Operations Center

MXG—Maintenance Group

PESZ—Primary Explosive Safety Zone

SESZ—Secondary Explosive Safety Zone

Terms

DUD FLARE—An aircraft loaded flare which failed to function or fire where the ejection end shows NO EVIDENCE of flare material and the weather seal is INTACT. This flare is no more or less hazardous than

a normal flare and can be down loaded using normal down load procedures.

HUNG FLARE—An aircraft loaded flare which failed to function or fire where the ejection end shows EVIDENCE of flare material and the weather seal is DAMAGED or MISSING. This flare presents a more hazardous condition than a normal flare.

Attachment 2

HOMESTATION FLARELOAD SEQUENCE OF EVENTS

Table A2.1. Flareload Sequence of Events.

ACTION	TIME
PLI/FLT CONTROL SWITCH CHECK COMPLETE	15+30
FLARE PRE-LOAD AND STRAY VOLTAGE CHECK START	12+00
FLARE PRE-LOAD AND STRAY VOLTAGE CHECK COMPLETE	10+00
FLARE UPLOAD START	10+00
FLARE UPLOAD COMPLETE	08+00
CONFIGURATION PASSED	08+00
SPOTTED	08+00

Attachment 3

PRIMARY AND SECONDARY EXPLOSIVE ZONES SURROUNDING DS MODIFIED C-5